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CALIFORNIA CRUSTACEA OF THE ORDER CUMACEA[1]

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The collection of cumaceans here reported upon was obtained in the vicinity of Newport, Calif., by Prof. G. E. MacGinitie, director of the Kerckhoff Marine Laboratory of the California Institute of Technology at Corona Del Mar, Calif. Newport lies in Orange County at about latitude 33°38′ N.

Knowledge of the cumacean fauna of the Pacific coast of North America is so slight that every new collection from that region contributes important information. Until now only three species have been known from the coast of California: *Bathycuma* (?) *longicaudata* Calman, from San Diego, Calif.; *Diastylopsis dawsoni* S. I. Smith, ranging from Monterey Bay, Calif., to Chignik Bay, Alaska; and *Colurostylis* (?) *occidentalis* Calman, from Monterey Bay, Calif., to Oregon. Only the last of these is represented in the present collection, while each of the other seven species represented proves to be new.

The genus *Cyclaspis* was hitherto unknown from the North American–Pacific region, and the genera *Procampylaspis* and *Oxyurostylis* were unknown from the entire Pacific region. Of the latter, only the typical species, *O. smithi* Calman, which is found only on the Atlantic–American coasts from Louisiana to Casco Bay, Maine, was known.

[1] Translated from the German by Coates W. Shoemaker, Smithsonian Institution.

55452—36——1

By the discovery of the new *Hemilamprops* (?) *californica*, the number of species of the group *Lamprops*+*Hemilamprops* found in the Pacific region is increased by one. Eight species had previously been described from that region, and I know of three additional new species from Russian material now in press, making a total of 12. When it is considered that from the much better investigated North Atlantic region only nine species of the group are known, to which four more from the southern seas may be added, the role that this group plays in the North Pacific region can be better appreciated.

Genus CYCLASPIS Sars

CYCLASPIS NUBILA, new species

FIGURE 34

Adult female.—The thoracic portion of the body is nearly as long as the abdominal. The carapace approximates three-tenths of the length of the body. The ocular lobe is distinct and reaches to the end of the pseudorostrum. The eye is strongly pigmented, nearly black. Lenses are indistinctly seen only in the hinder part. Subrostral notch distinct and deep, subrostal tooth acute. The carapace is finely and sharply pitted as if pricked with a needle, a form of ornamentation that is also repeated on the second free thoracic somite.

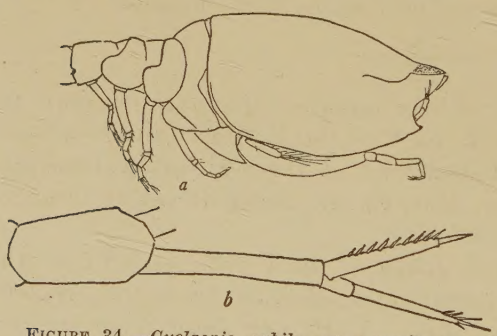

FIGURE 34.—*Cyclaspis nubila*, new species: *a*, Adult female, anterior end of body, lateral view, × 15; *b*, same, posterior end, × 34. (Magnifications approximate.)

A median carina runs the length of the carapace, and is also rather well developed on the second free thoracic somite. On the last three free thoracic somites the median carina is less well developed, and, as it approaches the posterior extremity of the abdomen, it becomes still more indistinct.

The hinder margin of the carapace and the second free thoracic somite stand in such close juxtaposition that the first free thoracic somite is visible only as a narrow band in its dorsal median portion and on each side posterior to the lower half of the hinder margin of the carapace. Here the visible portion of the first somite is somewhat wider, because the anterior margin of the second is recessed or excavate at this point.

The anterior margin of the second free thoracic segment in lateral view appears as high as the carapace. Posteriorly it falls off gradually to meet the dorsum of the third somite. Its posterior margin in dorsal view is produced to form an obtuse angle fitting into the anterior margin of the following somite, which is shaped to receive it.

The articulation between the antepenultimate and penultimate joints of the first pereiopod reaches about as far forward as the tip of the pseudorostral tooth. The basis is distinctly longer than the distal joints taken together and carries no distally projecting tooth. The last three joints are to one another approximately as 9 : 10 : 6.

The uropods (fig. 34, *b*) are about as long as the penultimate abdominal somite. Their peduncle attains about 1¼ times the length of the last abdominal somite. The exopod is fully two-thirds as long as the peduncle. The endopod is somewhat shorter than the exopod. On its inner margin there are about nine spines; distally it is not pointed but truncate and armed with a strong terminal spine.

Color.—The alcoholic specimen shows traces of its former coloring in lighter or darker brown areas. The subrostral angle is quite dark, and from it extends a narrow brown stripe, at first about parallel with and a little removed from the edge of the subrostral notch and then turning off to run down toward the ocular lobe. An indistinct brown spot is present on the mid dorsum of the posterior end of the carapace. The second and third free thoracic somites are somewhat mottled or beclouded in color but unsymmetrically so. The coloration on the last thoracic and first abdominal somites is more distinct. Finally, traces of pigmentation still persist on the first three pairs of pereiopods.

Length.—About 6 mm.

Occurrence.—A single adult female, the unique holotype (U.S.N.M. no. 71437) is from off Corona Del Mar, Calif., 7 fathoms, May 17, 1933 (no. 33).

Remarks.—For the many and diverse species of the genus *Cyclaspis*, Calman [2] gives a key in which our new species falls into the same category (B, a, *b*, B′−b′−2) with *C. levis* G. M. Thomson. These two species possess the following characters in common (certain characters are also added here on the basis of later described species) : Eye present, carapace wholly smooth, without ridges, ribs, or folds, without large tubercles, without strong teeth on the mid-dorsal carina, peduncle of the uropods not more than twice as long as the branches, basis of the first pereiopod without projecting tooth at the end, carapace less than one-third as long as the entire body, basis of the first pereiopod not twice as long as the distal joints taken together.

[2] Trans. Zool. Soc. London, vol. 18, pt. 1, no. 1, p. 6, 1907.

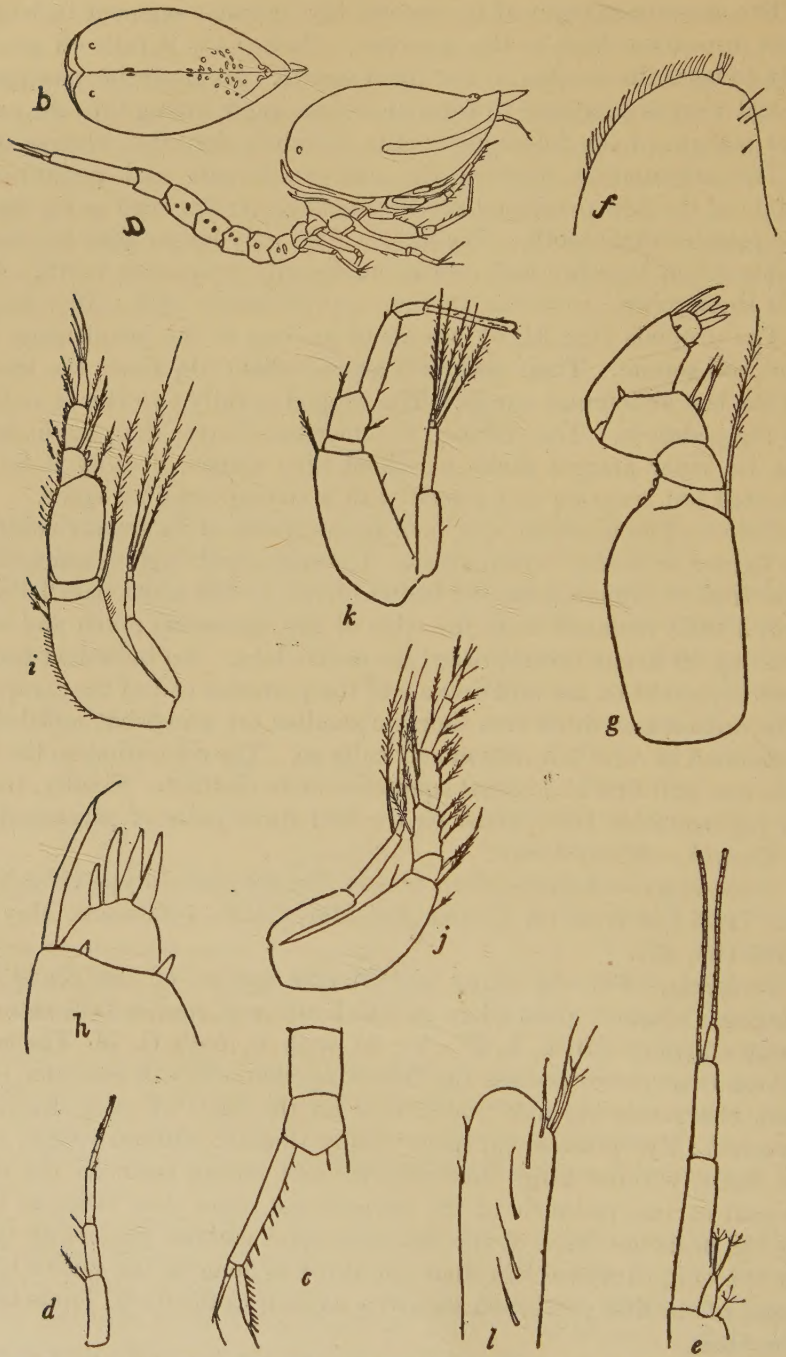

FIGURE 35.—*Campylaspis canaliculata*, new species, adult female: *a*, Lateral view, × 15; *b*, anterior end of body from above, × 15; *c*, posterior end, × 22; *d*, antennule, × 45; *e*, end of antennule, × 190; *f*, distal end of first maxilliped, × 190; *g*, second maxilliped, × 114; *h*, distal end of second maxilliped, × 310; *i*, third maxilliped, × 45; *j*, first pereiopod, × 45; *k*, second pereiopod, × 45; *l*, distal end of second pereiopod, × 290. (Magnifications approximate.)

Until now the only other species in this category has been *C. levis* Thomson, from which the new one is distinguished among other characters by the fact that the endopod of the uropods is not pointed but armed with a terminal spine. The following species of the genus likewise show a terminal spine at the end of the endopod: *carinata* C. Zimmer, *costata* Calman, *longipes* Calman, *picta* Calman, *unicornis* Calman, and *varians* Calman. These may be distinguished from the new species as follows: In *carinata*, *picta*, and *varians* the pseudorostral lobes distinctly unite in advance of the ocular lobe to form a pseudorostrum; *costata* has longitudinal ribs on the sides of the carapace; and *unicornis* has a forwardly directed tooth in the middle dorsal carina of the carapace. (The structure of the endopod of the uropod of *C. sibogae* Calman is not known. This species shows distinct ridges on the carapace.) The relative length of the carapace of *C. pusilla* G. O. Sars differs very slightly from that of *C. nubila* and also exhibits certain other similarities. The former, however, is essentially a smaller species, the length of the female with the brood pouch being 3.5 mm.

Genus CAMPYLASPIS Sars

CAMPYLASPIS CANALICULATA, new species

FIGURE 35

Female.—The thoracic portion of the body is almost as long as the abdominal, including the peduncle of the uropod. Viewed from above (fig. 35, *b*), the carapace is moderately pointed anteriorly. There is no subrostral notch. From the pseudorostral margin a relatively narrow but distinct furrow or groove, the margins of which are not developed as folds, runs backward and somewhat upward for about half the length of the carapace. On either side, near the hinder margin of the carapace, is a tiny pit or depression. Otherwise the carapace is entirely smooth, without sculpture. On the well-developed ocular lobe one sees a distinct median lens and two more or less distinct lateral lenses. A fine suture is evident along the median line of the carapace; this is also present on the abdomen. Its course, however, is not quite straight, but in very flat irregular curves. The roundish or elongate refractive flecks on the surface of the carapace that occur so often in members of this genus are present in this species also. There is a patch of them behind the frontal lobe. Alongside the median suture in the posterior third of the carapace there is an elongated spot or fleck. Similar small spots are also present on the abdominal somites.

The first free thoracic somite, as in a number of other species of the genus, forms a median, lobelike, pointed projection, turned forward and fitting into a corresponding notch in the posterior margin

of the carapace. A similar projection occurs also on the second thoracic somite. These projections, especially the first, are of considerable length.

The antennule (fig. 35, *d*, *e*) is slender. The first article of the peduncle is somewhat longer than either of the other two, which are subequal. The accessory flagellum is, as usual, very small.

The terminal joint of the first maxilliped (fig. 35, *f*) is very tiny. The basis of the second maxilliped (fig. 35, *g*, *h*), ventrally near the distal end projects as an angular dentiform edge, which, however, does not carry over to the outer margin. It probably represents the line of fusion between the basis and ischium. The outer margin shows a few low denticles near its end. On the outer margin of the merus there are a few similar denticles. The carpus has a strong tooth on its inner margin, and anteriorly a somewhat weaker tooth on the ventral side. The anterior margin of the propodus has two small teeth below and two bristles above. At the distal end of the outer margin there is a long powerful spine of peculiar structure. At first it diminishes gradually toward the tip, and then near its extremity undergoes a sudden contraction on the inner side, so that the spine distally forms a fine bristlelike structure that surpasses the terminal spines of the dactyl. At the end of the dactyl are four strong spines, a shorter one externally, with three longer ones on the inner side; of these the middle spine stands somewhat out of the line of the series, a little more toward the dorsal side than the others.

The basis, ischium, and merus of the third maxilliped (fig. 35, *i*) are broad; the following joints are slenderer. The basis is noticeably shorter than the distal portion of the limb. The inner margin of the merus is practically straight. The distal half of this inner margin is furnished with a row of low denticles. The outer edge likewise carries a few denticles in its distal portion. The carpus has a row of denticles on the inner margin and two small denticles on the outer. The propodus exhibits denticles only on the inner margin, while the dactyl is devoid of them.

The basis of the first pereiopod (fig. 35, *j*) is shorter than the distal part of the limb. The carpus and the propodus are of nearly equal length and longer than the dactyl. None of the joints has marginal denticles.

Of the last three joints of the second pereiopod (fig. 35, *k*, *l*), the carpus is scarcely shorter than the dactyl, while the propodus, as usual, is short, only about half the length of either of the other two joints. The dactyl is peculiar in not diminishing toward its end, indeed widening out somewhat instead. The distal extremity is rounded off and is without terminal bristles. A few bristles, however, do occur just before the end of the joint on its inner margin.

The peduncle of the uropods (fig. 35, *c*) is about as long as the last two abdominal segments taken together. On its inner margin there are about seven spines. The endopod is about half as long as the peduncle and on its inner margin also carries about seven spines. The exopod is, as usual, slenderer and shorter than the endopod.

Length.—About 4 mm.

Occurrence.—Between Balboa and Corona Del Mar, Calif., 7–15 fathoms, March and May 1933 (no. 28), two specimens, a female with brood pouch and an adult female (holotype, U.S.N.M. no. 71438), together with two specimens of *Oxyurostylis pacifica.*

Remarks.—The species is readily distinguished from all other hitherto known species by the hollowed-out groove on its carapace. *Campylaspis sulcata* has a similar groove, but it is wider, with its margin either side forming more or less of a ridge or fold.

Genus PROCAMPYLASPIS Bonnier

PROCAMPYLASPIS species

Occurrence.—Off Balboa, Calif., 15 fathoms, February 16, 1933 (no. 31), a female with brood pouch. The specimen undoubtedly represents a new species. The carapace has on each side a wide longitudinal groove extending about two-thirds the length of the carapace. The dorsum between the two grooves carries a number of not very pronounced tubercles. Three larger but much flattened tubercles are present close to the posterior margin of the carapace, the largest in the middle between the smaller lateral ones. The specimen is somewhat damaged and is thickly encrusted with sand, which cannot be removed without further harm. For this reason I refrain from basing the description of a new form upon it and leave it unnamed.

Genus HEMILAMPROPS Sars

HEMILAMPROPS (?) CALIFORNICA, new species

FIGURE 36

Female with brood pouch.—The thoracic portion of the body is somewhat longer than the abdomen, with the exception of the telson. The carapace is as long as the first four free thoracic somites taken together. In lateral view its anterior and upper margins appear to meet at right angles. From above (fig. 36, *b*) it appears anteriorly broadly truncate. A subrostral notch is scarcely perceptible. On either side of the carapace is an arched fold, which, beginning at the pseudorostral margin, runs obliquely backward and upward and, bending around in a symmetrical turn, back anteriorly to merge with the median carina found on the frontal lobe. The ocular lobe is distinct and large. On it are seven lenses, one in the center,

with six disposed in a ring about it. The pseudorostral lobes are juxtaposed but for a very short distance in front of the ocular lobe.

The telson (fig. 36, *c*) is longer than the penultimate somite of the abdomen but not so long as the last two somites taken together. Distally there are three or four spines on the lateral margin; apically there are three spines, of which the median is much longer than either of the lateral ones. Below, and somewhat external to the two lateral spines, there are two other long, practically bristlelike spines.

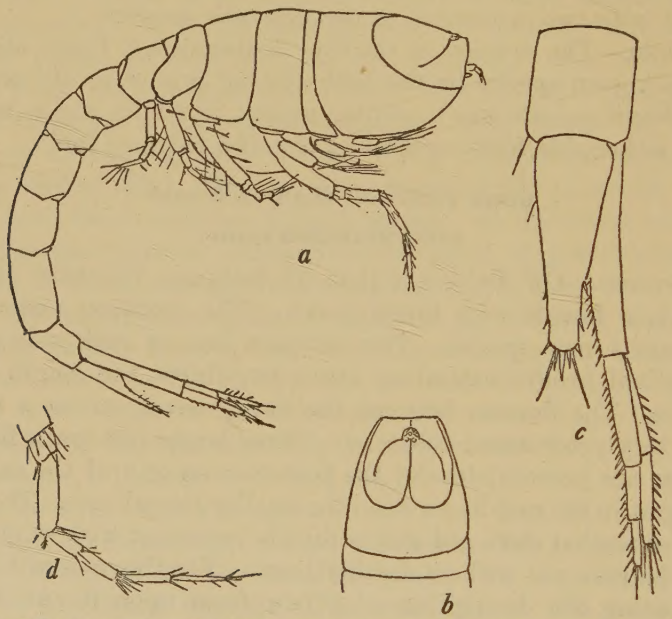

FIGURE 36.—*Hemilamprops californica*, new species, female with brood pouch: *a*, Lateral view, × 19; *b*, anterior end of body from above, × 19; *c*, posterior end, × 33; *d*, distal end of second pereiopod, × 33. (Magnifications approximate.)

The first pereiopod was lacking in all the specimens at hand. The second pereiopod (fig. 36, *d*) is moderately long. The length of its three distal joints is approximately as 19 : 14 : 12.

The peduncle of the uropods (fig. 36, *c*) extends very slightly beyond the telson. The endopod is about as long as the peduncle. The exopod shorter. Of the three joints of the endopod, the first is somewhat longer than the other two taken together; the terminal joint is somewhat shorter than the penultimate. On the inner margin of the peduncle and of the endopod there is a relatively dense armature of spines; on the inner margin of the exopod setae, on the outer margin spines.

Length.—One specimen has a length of about 8 mm. The other two are smaller, about 6 and 5.5 mm long, respectively.

Occurrence.—Off Corona Del Mar, Calif., 7 fathoms, May 17, 1933 (no. 32), a female with brood pouch, together with a specimen of *Colurostylis* (?) *occidentalis*. Between Balboa and Corona Del Mar, 17-33 fathoms, May 17, 1933 (nos. 26, 30), two females with brood pouches. Holotype, U.S.N.M. no. 71439.

Remarks.—Lacking a male, I cannot say with certainty whether the species belongs to *Hemilamprops* or *Lamprops*. As the suborbital notch is but slightly developed, I place it with *Hemilamprops* with a question mark. (*Lamprops carinata* Hart tends to bridge the gap between the two genera. The male has no pleopods—a *Lamprops* character—but has well-developed and not shortened antennal flagella—a *Hemilamprops* character.)

In possessing a single oblique fold on the carapace, the new species agrees with *Hemilamprops uniplicata* G. O. Sars and with *Lamprops* (?) *beringi* Calman. Both, however, lack the reverse forwardly directed branch of this fold. The armature of the telson, as well as the relative length of the three distal joints of the second pereiopods, is also different. In *L.* (?) *beringi*, moreover, there is a distinct subrostral notch with an acute-angled subrostral tooth.

Genus DIASTYLIS Say

DIASTYLIS CALIFORNICA, new species

FIGURE 37

Female with brood pouch.—The thoracic portion of the body is somewhat longer than the abdominal but shorter than the abdomen and telson together. The abdominal portion is quite sharply set off from the broader and higher thoracic portion.

On the ocular lobe three indistinct lenses may be distinguished. There is a distinct subrostral notch. The subrostral angle is but narrowly rounded.

The margin of the subrostral notch carries several anteriorly directed plumose setae. The margin of the suborbital angle is only indistinctly denticulate, although the margin of the carapace a little farther back (behind carina no. 2 described below) has a short row of long slender teeth.

The carapace is pronouncedly and characteristically sculptured, showing strong elevated ridges or keels, enclosing between them noticeably excavate or depressed areas. At two places on either side of the carapace, three such keels run together. The angles (in the stereometric sense) thus formed by these keels rise well above the general surface of the carapace, almost forming blunt teeth. One of the angles (no. 1) lies just before the end of the frontal lobe but at some distance from it; the second (angle no. 2) is a little distance behind the end of the frontal lobe. From angle

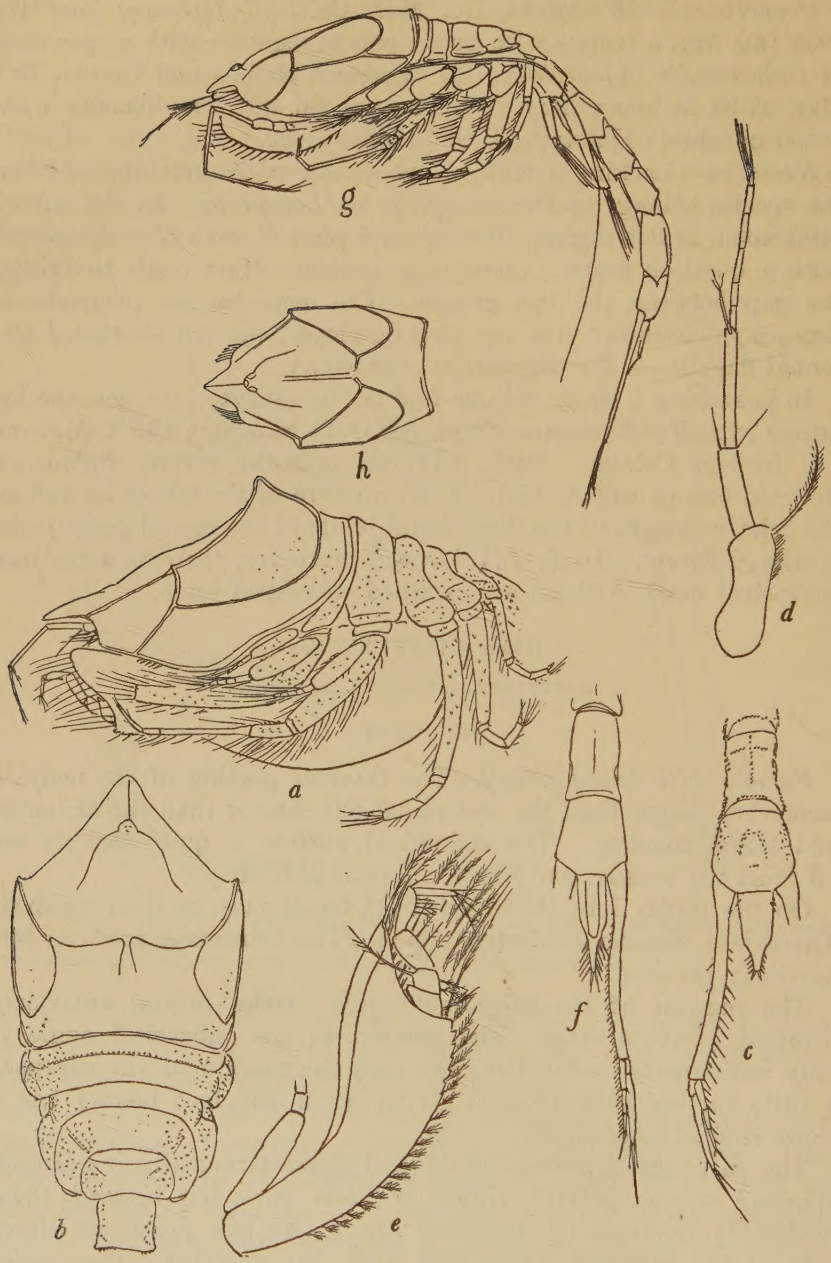

FIGURE 37.—*Diastylis californica*, new species: *a*, Female with brood pouch, anterior end of body, lateral view, × 13; *b*, female with brood pouch, anterior end of body from above, × 13; *c*, female with brood pouch, posterior end, × 13; *d*, female with brood pouch, antennule, × 33; *e*, female with brood pouch, third maxilliped, × 25; *f*, male in nuptial dress, posterior end, × 13; *g*, male in nuptial dress, lateral view, × 9; *h*, male in nuptial dress, carapace from above, × 9. (Magnifications approximate.)

no. 1 a ridge or keel (keel no. 1) runs obliquely forward and terminates about at that point where the pseudorostral margin, in forming the subrostral notch, curves downward; another ridge (keel no. 2) runs obliquely outward and forward in a flat anteriorly open curve onto the ventral margin of the carapace, which it strikes a little distance behind the subrostral angle. Keel no. 3 runs obliquely backward and upward and forms a connecting ridge or keel between angles nos. 1 and 2. Running out from this angle no. 2 are also the following ridges or keels: Keel no. 4 at first runs posteriorly and then, bending outward and forward, in the latter part of its course runs practically parallel to the lower margin of the carapace but at a little distance removed from it; finally it runs up against keel no. 2 and ends at that point. Keel no. 5, forming a very flat, anteriorly open curve, extends nearly perpendicularly to the median line; it does not, however, meet its counterpart on the opposite side of the carapace, as a narrow gap or interval intervenes between the two. At this point, within the gap, the surface of the carapace is deeply impressed; this impression is briefly continued backward. In lateral view the dorsal contour of the carapace in advance of keel no. 5 suddenly slopes steeply, yet evenly, downward to the pseudorostrum.

The telson (fig. 37, *c*) is as long as the last abdominal somite, or the equally long penultimate one. In the preanal portion of the telson the lateral margins converge but slightly; on the other hand, the postanal portion, which is a little more than half as long as the preanal, narrows abruptly. On each side of the postanal portion of the telson there are about four lateral spines in addition to the terminal pair.

The antennule (fig. 37, *d*) is slender and exceeds the pseudorostrum by the last joint of its peduncle.

The basis of the third maxilliped (fig. 37, *e*) distally is markedly broadened and, moreover, its outermost portion is not inconsiderably produced; its outer margin is dorsally turned upward a little. As the "mouth-field" is considerably narrower than the combined bases of the two maxillipeds, these at their line of contact form a roof, the angle of whose ridge is higher than normal. As a consequence, more of the third maxillipeds is to be seen in lateral view (fig. 37, *a*) in this species than is usually the case. Not one of the specimens possessed a complete first pereiopod. One female, however, had a first pereiopod complete on the inner side except for a portion of the dactylus. The distal extremity of this particular limb is long and slender; carpus less than half as long as the basis; propodus clearly longer than the carpus. The second pereiopod also is slender; last

three joints taken together are longer than the basis; last two joints taken together not quite two-thirds as long as the carpus; the dactyl longer than propodus. There are no rudimentary exopodites on the third and fourth pereiopods.

The uropods (fig. 37, *c*) are long and slender. The peduncle is longer than the last two abdominal somites taken together. Its inner margin is sparsely spined; spines somewhat variable in size. The endopod is about as long as the telson; the exopod somewhat longer. The three joints of the endopod vary but slightly in length, and carry isolated spines on their inner margins.

The integument is roughened practically throughout with tiny chitinous processes or projections. These vary in size, at times even assuming the character of fine, small teeth, as on the posterior region of the carapace and also on the sides of the free thoracic and abdominal somites, as well as on the outer surface of the proximal portions of the pereiopods.

Length.—About 9 mm.

Male in nuptial dress (fig. 37, *f–h*).—The differences in the body form and in the development of the extremities usually found between the males and females within the genus occur here also; the three lenses are more distinct on the ocular lobe, the setae in the subrostral notch are stronger and more numerous, and the area about the subrostral angle is clearly denticulate. On the other hand, the row of denticles on the margin of the carapace behind keel no. 2 is lacking. The keels found on the carapace of the female are present but are not nearly so high or so strongly developed, nor are the areas between them so deeply excavated. Their placement is also somewhat different: Angle no. 2 is moved farther backward and substantially nearer the median line than in the female; keel no. 1 eventually disappears anteriorly without reaching the edge of the carapace; keel no. 5 is very short. It eventually disappears toward the median line and here merges with an indistinct longitudinal keel, which runs from about the mid length of the frontal lobe to the point of juncture with keel no. 5 in the median line of the carapace. From the forwardly turned branch of keel no. 4 and, in fact, at about the point where the turn is completed, originates another keel that runs to the posterior edge of the carapace. This keel is entirely absent in the female. It corresponds with the forward-running branch of keel no. 4, of the "lateral line", which so frequently is found in the male in the family Diastylidae.

The difference in length between preanal and postanal portions of the telson (fig. 37, *f*) is not so pronounced as in the female, while the telson is proportionately longer and slenderer. It attains the length of the penultimate abdominal somite and is, like it, clearly

longer than the last somite. In addition to two terminal spines, it carries on either side of its postanal portion about five fairly long lateral spines.

The carpus of the first pereiopod is noticeably shorter than the propodus and the latter is clearly shorter than the dactyl.

The peduncle of the uropod is about twice as long as the telson. The exopod is clearly shorter than the telson and the endopod is somewhat shorter than the exopod. The three joints of the endopod are successively somewhat shorter from first to last. The spines on the inner side of the peduncle and endopod are weaker but more numerous than in the female.

The integument of the male is also roughened but not so much as in the female.

Length.—About 12 mm.

Occurrence.—Between Balboa and Corona Del Mar, Calif., 10–67 fathoms, November 25, 1932, to July 1, 1933 (no. 27), three females, one the holotype (U.S.N.M. no. 71440), with brood pouch, and two adults in poor condition and incomplete; off Balboa, Calif., 66 fathoms, March 17, 1933 (no. 29), a male in nuptial dress; off Balboa, between 15 and 66 fathoms, April 10, 1933 (no. 34), one male in nuptial dress.

Remarks.—The peculiar sculpturing of the carapace in both sexes distinguishes this new species from all other representatives of the family. In the form of its telson it shows certain relationships to the genus *Makrokylindrus;* both have an almost cylindrical preanal portion distinctly longer than the postanal, which carries a few or no lateral spines. In species of *Makrokylindrus*, however, the telson is longer than the peduncle of the uropod, or at least nearly as long (with the exception of *M. acanthodes* Stebbing). Furthermore, a more or less thick armament of the carapace is the rule among these species, and spines exist at least on the pseudorostrum, especially on its anterior portion. In the species before us the carapace is indeed roughened with fine granulations or tiny denticles, but on its pseudorostrum this roughness is least developed and is practically lacking on its anterior portions. Since to me the relationship with *Makrokylindrus* appears slight, I have refrained from placing this new species in *Makrokylindrus*, as I at first had tentatively intended.

A similar form of the telson also occurs in the genus *Paradiastylis*, but here, too, no closer relationship is indicated, for the male in nuptial dress lacks the strikingly widened base of the pereiopods, which is so characteristic of *Paradiastylis* and *Dimorphostylis.*

Genus DIASTYLOPSIS Smith

DIASTYLOPSIS TENUIS, new species

FIGURE 38

This new species is so extraordinarily closely related to *Diastylopsis dawsoni* S. I. Smith that I shall limit the description in the main to a differential diagnosis. The body, especially the abdominal portion, is slenderer. The subrostral notch is indeed distinct, yet not so deep, owing to the fact that the subrostral angle is not so produced as to form a definite tooth. It is only denticulate, like the anterior margin of the carapace behind it. The oblique lines on the carapace and frontal lobe are present, but only the first line on the carapace is well developed throughout. The others are very weak and often scarcely or not at all perceptible. The layout of the lines also is somewhat different. The first line extends laterally somewhat nearer the margin of the carapace than indicated in Calman's drawing of *dawsoni*. The second line has the same position as in *dawsoni* but forms a continuation of the first line of the frontal lobe. This, therefore, runs farther forward than in *dawsoni*. The second line of the frontal lobe lies about in the position of the first in *dawsoni*, and therefore not on the hinder end of the frontal lobe. The third carapace-line extends in the direction of the posterior angle of the frontal lobe and thus lies more posteriorly than in *dawsoni*.

The ventral portion of the second free thoracic segment is considerably longer; anterior and posterior margins (exclusive of the articular membranes) are approximately parallel, whereas in *dawsoni* they distinctly converge ventrally. The notch in the anterior lateral margin of this somite is narrower than in *dawsoni*.

On the penultimate thoracic sternite of *dawsoni* there is a single tooth; on the last there are two teeth close together; there is also one tooth on the first abdominal sternite. Our new species has no teeth on the penultimate thoracic and the first abdominal sternite; only the last thoracic sternite bears an unpaired tooth. The posterior lateral margins of the abdominal somites are armed with a few isolated denticles.

The telson is slenderer than in *dawsoni*. Its length is about three-fourths of the last abdominal somite, which itself also is much slenderer than in *dawsoni*. Besides the two terminal spines, the telson has only two or three pairs of lateral spines; in *dawsoni* the number is greater.

The third maxilliped, as in *dawsoni*, shows a widening of the basis distally. On the other hand, our species has only one weak denticle on the inner end of the basis, not a strong projecting tooth. The ischium does project outwardly, ending bluntly, but not actually

dentiform. (The first two pairs of pereiopods of either side in all the specimens were incomplete.)

The uropod-peduncle is only a little longer than the last abdominal somite and extends beyond the telson by about a third only of its own length, not by half of its length as in *dawsoni*. The subequal branches attain about two-thirds the length of the peduncle, not, as in *dawsoni*, a good half of the peduncle length. There are fewer spines on the inner margin of the peduncle and endopod than in *dawsoni*.

Length.—The female with brood pouch is about 9 mm, whereas in *dawsoni* the length of the adult female is about 14.5 mm.

Occurrence.—Off Corona Del Mar, Calif., 20 fathoms, summer of 1933 (no. 26), an adult female and three females with brood pouches, one the holotype (U.S.N.M. no. 71441).

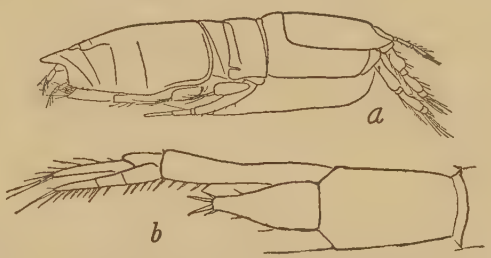

FIGURE 38.—*Diastylopsis tenuis*, new species, female with brood pouch: *a*, Anterior end of body, lateral view, × 9; *b*, posterior end, × 25. (Magnifications approximate.)

Remarks.—Beneath the chitin of the carapace and also at intervals in other parts of the body a distinctive structural peculiarity is manifest in the shape of more or less numerous, chiefly circular, strongly refractive flecks of varying size, which at times may coalesce to form larger irregular areas. I consider this phenomenon here to be an artificial condition resulting from the method of preservation employed.

Genus OXYUROSTYLIS Calman

OXYUROSTYLIS PACIFICA, new species

FIGURE 39

Female with brood pouch.—The thoracic portion of the body is almost as long as the abdominal, the telson excepted. Seen from above, the carapace narrows anteriorly more regularly and evenly than in the typical species, *smithi* Calman. The subrostral notch is more developed than in *smithi*. The subrostral angle is rounded. The surface of the carapace and of the free thoracic sternites is rough, being thickly beset with very fine denticles. Only the anterior portion of the pseudorostral lobes is free of them. Two somewhat stronger denticles stand side by side in front on the ocular lobe. Two oblique impressions extend over the frontal lobe, so that in lateral view two steplike offsets are apparent. These, together with the fine denticulation of the carapace, make it appear as if there are two oblique rows of denticles on the frontal lobe.

The telson is longer than the last abdominal somite and somewhat shorter than the penultimate. On either side it carries three or four spines. The somewhat produced posterior angle of each of the two anal flaps is armed with a long bristlelike spine.

The antennule is long and slender and exceeds the tip of the pseudorostrum by the greater part of the last joint of its peduncle.

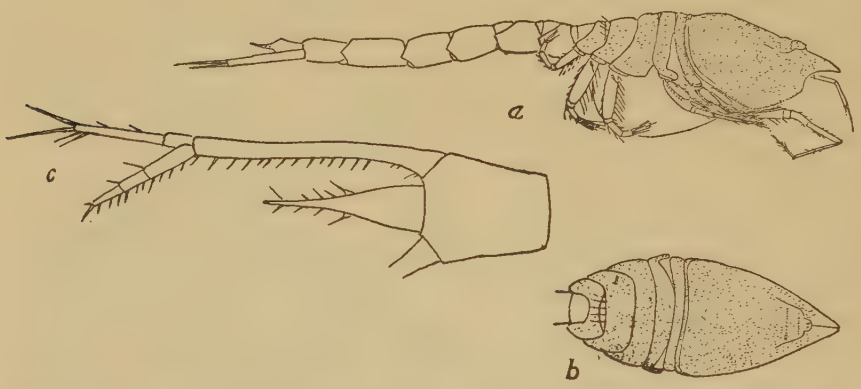

FIGURE 39.—*Oxyurostylis pacifica*, new species, female with brood pouch: *a*, Lateral view, × 13; *b*, anterior end of body from above, × 13; *c*, posterior end, × 33. (Magnifications approximate.)

The first pereiopod is long and slender and exceeds the tip of the pseudorostrum by a little more than its last two joints. Of the last three joints, the penultimate is the longest, the antepenultimate is somewhat shorter, and the last is only a little more than half as long as the penultimate.

The peduncle of the uropod exceeds the tip of the telson by almost one-third of its length. On its inner margin there are about 16 fine spines. The exopod is about as long as the endopod and attains almost half of the length of the peduncle. Of the three joints of the endopod, the first is the longest, the last is somewhat shorter, and the middle one slightly shorter yet. On the inner margin of the three joints there are, respectively, 4, 3, and 3 spines.

Length.—About 7 mm.

Occurrence.—Between Balboa and Corona Del Mar, Calif., 7–15 fathoms, March and May 1933 (no. 28), two females with brood pouches, one the holotype (U.S.N.M. no. 71442), accompanied by two specimens of *Campylaspis canaliculata*.

Remarks.—The species differs so fundamentally from *O. smithi*, the heretofore unique representative of the genus, that there is no possibility of confusing the two.

Genus COLUROSTYLIS Calman

COLUROSTYLIS OCCIDENTALIS Calman

The specimens agree well with Calman's description except that the tip of the terminal spine of the endopod of the uropod extends nearly to the end of the exopod, whereas, according to Calman, it falls somewhat short of it.

Occurrence.—Off Balboa, Calif., 33 fathoms, May 17, 1933 (no. 30), an adult male, in company with two specimens of *Hemilamprops (?) californica;* off Corona Del Mar, 7–20 fathoms, May 1933 (nos. 26, 33), two adult females and three females with brood pouches.

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